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EDIS TASK I REPORT

WORK UNIT 1.3

IDENTIFICATION OF

USER NEEDS

21/1/4

3 January 1966

Contracting Officer

Research & Development Procurement Office, USAERDL

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PREFACE

This report is one of a series of documents being prepared under the EDIS Task I contractual effort. The objective of these reports is to document existing and potential sources of, and requirement3 for, engineering and scientific data and information in the Army RDT&E community. The information contained in these reports will provide the primary input and data base to the Task II (software development), Task III (network design) and Task IV (training) efforts. Each report presents and discusses data and information gathered and analyzed in a specialized area of study pertinent to the design and development of EDIS. Although these documents are self-contained, each comprises part of a planned effort to develop a data base for decisions about the EDIS concept.

ABSTRACT

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This report presents the identification of user needs in the Army RDT&E community. Two types of information are provided in this report. The first type includes discussion of the RDT&E cycle, the level of informational need, time response, item categories and other factors as they relate to the user of scientific and technical information. The second type of information presented is parametric and includes information on the users in the Army RDT&T community classified by discipline, subject field mission/function and geographic distribution. This information was developed as part of the Tax. I effort for the Army Engineering Data and Information System (EDIS).

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1.1 Purpose and Scope

This report presents the results of a study on the characteristics and needs of Army employees (civilian and military) who use scientific and technical data and information to accomplish their assigned tasks. The objective of this study is to develop parametric information concerning user needs for use in determining the functional requirements of EDIS.

The study includes only those persons in the Army whose work is classified as contributing to research, development, test and evaluation (RDT&E). The governing parameter in the identification of their needs and characteristics was the conceptual configuration of EDIS as presented in EDIS-1: EDIS Concept and Action Plan Report, and EDIS-2: Recommended Approaches to Design of the U.S. Army Engineering Data and Information System. The parameters by which user needs have been identified and classified include the following: (1) discipline, (2) field, (3) installation, (4) specific phase of the RDT&E cycle, (5) item category, (6) function, (7) level of information need, (8) time response, and (9) geographical distribution. Working within this scope, the identification of user needs and characteristics has been made to achieve the stated purpose of this study.

1.2 Conclusions

A summary of the conclusions reached in this study is presented below. References are shown indicating the sections where detailed discussions leading to these conclusions are presented.

- a. The results of the <u>DOD User Needs Study</u> are applicable to the Army RDT&E community as presented in the TEL/TIPS Survey. (See Section 3.0)
- b. There appears to be no outstanding evidence that the different segments of the RDT&E cycle present different information problems or needs for the user. (See Section 4.0)
 - (1) The segments of the RDT&E cycle do not influence the user as to the information sources he uses, the level of information he needs, or the time response required to perform his task.
 - (2) Proportionately greater amounts of certain types of information are needed by the user in different segments of the RDT&E cycle but not to the point of exclusion of other types of information.
- c. The level of information most often desired by the user is a detailed analysis of a subject. (See Section 5.0)
- d. There is a strong need for ar information system that incorporates those qualities that cause a user to go to his local information sources first, namely: (1) availability; (2) authoritativeness; and (3) a historical record of helpfulness to the user. (See Section 8.0)
- e. The individual user of data and information should not be burdened with knowing about all of the specialized information centers inside and external to the Army. Rather, EDIS should interface with as many of these systems as possible so that the user has only one system to address to receive an answer to his enquiry. (See Section 8.0)

- f. Over fifty-three percent of the assignments of Army RDT&E personnel are in the Engineering discipline. No other discipline accounts for more than twelve percent of the RDT&E assignments. (See Section 9.0)
- g. All disciplines are heavily concentrated in the combined Northeast and Middle Atlantic area.
- h. Engineering and Physics have their largest concentrations in the Northeast.
- i. Engineering is the only discipline that has a significant number of users in each geographic area of the U.S.

1.3 Recommendations

The following recommendations are made based on this study:

- a. The maximum time response of EDIS should be 48 hours or less, if possible, to answer a request. Satisfying this requirement will achieve the following:
 - (1) Minimize the amount of elapsed time (as opposed to the actual time) in performing a task that is dependent upon obtaining information.
 - (2) The reliance of the user on local information sources would not be threatened but complemented, establishing a proper balance between the information sources of one's local environment and external information resources.
 - (3) Establish user's confidence in the system and thereby assure his continued use of the system. (See Section 6.0)
- b. EDIS should interface with specialized information centers inside and external to the Army to achieve the following:
 - (1) Provide the user of scientific and technical information a single reliable and comprehensive source for information and data.

- (2) Eliminate for the user the need of keeping informed of the many specialized information systems now in existence and how to use them.
- (3) Assure for the user that all relevant information centers will be queried to obtain the requested information. (See Section 8.0)
- c. The EDIS design should provide for monitoring of requests of the users as to their level of informational need and assure that the answer is commensurate with the analysis of the request. (See Section 5.0)
- d. A study should be performed of a number of existing successful information systems to determine:
 - (1) The importance of time response to the user.
 - (2) The maximum allowable time response of an information system before its effectiveness begins to be compromised.
 - (3) Other user needs satisfied by each system in order for it to meet with success. (See Section 6.0)
- e. If item-category information about the user could be gathered at a minimal cost, it should be obtained. This information would provide an input to the development of the EDIS common language. (See Section 7.0)
- f. The TEL/TIPS data file of Army personnel should be maintained and updated. Information about the user of information in the Army would be readily available for the design of EDIS or any other information system project. The TEL/TIPS data file should also be maintained as a expert-to-expert locator interfaced with EDIS upon its implementation.

2.1 Background Information

In early 1965, the Howard Research Company began work on Task I of the Engineering Data and Information System (EDIS) for ERDL, Fort Belvoir, U. S. Army. purpose of EDIS Task I is to determine the information needed and available, the location and characteristics of that information, and the strengths and weaknesses of existing systems presently handling engineering data and information. The objective of EDIS Task I is to supply EDIS Task II (Development of EDIS Software) and EDIS Task III (Network Design of EDIS) with a data base from which to proceed. The basic concepts of EDIS and their development are discussed in the EDIS-1 report, (AD 444700L); the EDIS-2 report (AD 453737L); the EDIS Task I Progress Report, dated 15 June 1965; and the EDIS Task I Interim Report, dated 1 September 1965. The latter two reports were prepared by Howard Research Company.

This report presents the results of Work Unit 1.3,

Identification of User Needs, which represents the first

phase of a two-part study on user needs of the Army

RDT&E community. The final phase of this study will be

performed under work Unit 1.5, Determination of Additional D&I Needs.

2.2 Contents and Scope

Two types of information are provided in this report. The first type of information includes discussions of the RDT&E cycle, the level of informational need, time response, item categories and other factors as they relate to the user of scientific and technical information. From these discussions, specific user needs are identified that are important to the design of EDIS.

The second type of information presented is parametric and includes information on the users in the Army RDT&E community classified by discipline, subject field, mission/function, and geographical distribution. This type of information is also important to EDIS Task II and Task III for design purposes, since it shows the characteristics and concentration of potential users of EDIS. This information should be used in the design of EDIS in conjunction with the information contained in the concurrent HRC reports on the categorization of D&I holdings and existent data systems.

3.1 <u>Information Sources Used</u>

In order to accomplish the objectives of this study, two surveys were used as primary sources of information. The first survey, the <u>DOD User Needs Study</u> conducted by the Auerbach Corporation, covered the entire Department of Defense, using a statistical sample of approximately 1,400 persons performing work in RDT&E. The <u>DOD User Needs Study</u> provided information in each of the following categories:

- a. Characteristics of the DOD RDT&E population (e.g., age, education, job title, rating, MOS or job code, type, kind, and field of activity).
- b. Characteristics of RDT&E tasks (e.g., field, length of task, how originated, kind, form, and nature of output).
- c. Characteristics of the information chunks acquired and used in performing RDT&E tasks (e.g., class, media, volume, depth, timeliness).
- d. Use of information services (e.g., TAB, DDC, information centers).

The second source, the TEL/TIPS Survey, was limited to personnel performing work in RDT&E in the Army. The survey, conducted by CEIR, Inc. in FY 1964 as part of the On-Site STINFO Survey, located and interviewed over 13,000 Army RDT&E personnel. Included in the survey were the

ducted by CEIR, Inc., September 1964.

DOD User Needs Study, by Auerbach Corp., Vols. I and II,
May 1965.

TEL/TIPS Survey, part of the On-Site STINFO Survey, con-

following kinds of information: name, grade or rank, date of birth, location by installation or organizational element, job title, organization title, current assignment, experience, education by degree held and major subject, and current assignment description.

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A special user needs study was made of chemists in the Army. Conducted by Charlotte Smith of Frankford Arsenal, this study surveyed eighty two users of chemical information to determine their information requirements. The report shows the position ratings and educational level of this to group to be higher than those found in TEL/TIPS and the DOD User Needs Study. Several applications of the results of this user need study are made in the following sections.

Other works on the needs of users of scientific and technical information were studied (See Bibliography). Although not directly relevant due to their coverage of specific occupations or subject fields (e.g., atomic physicists and chemistry), these reports provided useful background information for this study.

3.2 Correlation of Data from Information Sources

In order to apply the results of the <u>DOD User Needs</u>

<u>Study</u> to the Army RDT&E community, it was first necessary to compare the two surveys to determine the correlation between the data. This was done by matching the results of corresponding areas in both surveys. The areas used to accomplish this correlation were discipline and position rating.

The first match is by disciplines. The current assignments found in the TEL/TIPS Survey were divided into the nine disciplines, and the percentage of users for each discipline was determined. The correlation with the DOD User Needs Study was achieved by using the data on MOS and job codes which reflect disciplines. The results of this match are shown below:

Discipline	•	TIPS Survey nt Assignments (%)	DOD User Needs Study MOS - Job Code (%)
Astronomy		0.1	0.3
Biology		9.2	3.0
Chemistry		11.9	7.0
Earth Science		3.3	4.0
Engineering		53.6	51.0
Mathematics		6.9	6.0
Physics		10.5	10.0
Psychology		1.9	1.0
Social Science	е	2.6	
Other			17.7
•	TOTAL	100.0%	100.0%

This correlation between these two surveys show the following about RDT&E personnel in the Army and DOD:

- a) Slightly higher than fifty percent of the RDT&E personnel are in Engineering;
- b) Between ten and eleven percent of the personnel are in Physics;
- c) Between six and seven percent are in Mathematics and Statistics;
- d) Between three and four percent are in Earth Sciences; and
- e) Between one and two percent are in Psychology.

In Biology and Chemistry, the percentages are slightly higher for the Army than they are for all of DOD. This heavier concentration in the disciplines of Biology and Chemistry is to be expected considering the varying missions of the three services that make up DOD.

The second match was made on military and GS position ratings. The following chart shows the correlation for these position ratings.

TEL/TIPS Survey DOD User Needs Study Position Rating (%) (%)						
POSICION RACING						
GS05, GS07, 00E	² } 8	4				
00E5, 00E6	, -	-				
0001, GS09	11	8				
0002, GS11	20	15				
0003, GS12	24	23				
0004, GS13	19	24				
0005, GS14	12	16				
0006, GS15	5	8				
0008, GS16, 031	3 1	2				
TO	TAL 100%	100%				

This chart shows that the position ratings for the Army and for DOD RDT&E personnel have a close correspondence. Over sixty percent of the RDT&E personnel have position ratings in grades GS-11, 12, and 13.

The results of these two matches show that the two surveys correspond very closely. It is, therefore, concluded that the results of the <u>DOD User Needs Study</u> are applicable to the personnel structures of the Army as reflected by the TEL/TIPS Survey.

4.0 USER NEEDS AND THE RDT&E CYCLE

This section presents a discussion of the relationship between user needs and the RDT&E cycle. The purpose of this section is to determine if there are varying types of information or special information problems associated with the different segments of the RDT&E cycle.

4.1 Types of Information Needed and the RDT&E Cycle

Table 4.1 shows the segments of the RDT&E cycle, along with a listing of the types of information needed most often by the user for each segment. Included in the table are percentages which indicate the relative need for each type of information. The data used to prepare this table was obtained from the <u>DOD User Needs</u> Study.

A general trend can be noted in the types of information required by the user as the area of work changes from one part of the cycle to another. As the area of work approaches the research segment of the cycle, the use of theories, ideas and conceptual information increases, but not to the exclusion of other types of information. Therefore, users engaged in research work tend to use media, such as journals, more frequently than those who are engaged in other segments of the RDT&E cycle.

Table 4.1 Types of Information Needed Most Often by the User for Each Segment of the RDT&E Cycle

Cycle Segment

A.	Research		Relative
	specification	nd characteristics, s ques, experimental	27
	and procedure		23
	formation	as, conceptual in-	15
	4. Technical sta information	tus and progress	15
В.	Development, Engi	opment, Advanced neering Development, ystems Development	
	specification	nd characteristics, s ques, experimental	46
	processes, prand procedure	oduction processes s, utilization and s and procedures	18
	_	tus and progress	10
		as, conceptual in-	7
c.	Reliability and Q	uality Control	
	specification		40
	processes, pr	ques, experimental oduction processes s, utilization and	
	test processe	s and procedures. as, conceptual in-	28
	formation	tus and progress	7
	information	can and brodress	3

Table 4.1 (Cont'd)

D.	R&D Support	Relative Need (%)
	 Performance and characteristics, specifications 	42
	 Design techniques, experimental processes, production processes and procedures, utilization and 	
	test processes and procedures	21
	 Technical status and progress 	
	information	12
	4. Theories, ideas, conceptual in-	
	formation	7

4.2 Information Problems and the RDT&E Cycle

Another trend shown by the <u>DOD User Needs Study</u> concerns where the users in each segment of the cycle obtain their information. The closer the user is to the research segment of the RDT&E cycle, the greater is his reliance on libraries. Also, in the research segment of the cycle, the need for information from manufacturers or suppliers is significantly less than in other segments of the cycle. For all other segments of the cycle there is no significant difference as to where the user goes to obtain his information.

Concerning the RDT&E cycle, two other results should be pointed out. The RDT&E cycle does not influence the level of information needed by the user (see Section 5.0). Additionally, the time response required by the users is the same for all segments of the RDT&E cycle (see Section 5.0).

4.3 Conclusions

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There appears to be no outstanding evidence from the DOD User Needs Study that the different segments of the RDT&E cycle present different information problems or needs for the user. The study shows that the same types of information are needed by the user in each segment of the cycle, although certain segments may use a proportionately greater amount of some types of information than other segments. Similarly, user needs in other areas, including information sources used, level of information needed, and time response required have been found to be independent of the segment of the RDT&E cycle in which the user is engaged.

5.1 Results of "DOD User Needs Study"

The level of informational need refers to the specificity of the information requested by the user. The DOD User Needs Study classified the desired depth or level of information required by the user in three categories:

1) once-over-lightly information; 2) detailed analysis; and 3) specific answers. The results of the survey showed that 46 percent of the users requested detailed analysis information, 22 percent requested a specific answer, and 15 percent requested once-over-lightly information. These percentages corresponded closely with percentages for information received in response to user requests. These figures indicate that most users want to provide themselves with a good grasp of the information they are seeking.

The results of this question were matched with the results of other questions in the survey to determine if any outstanding features might result. The following is a summary of those results:

- a. Kind of Task vs. Desired Depth of Information: The survey shows that the level of informational need does not vary with the various segments of the RDT&E c_{X} .
- b. Man-Days of Task vs. Desired Depth of Information: As the length of the task increases, the need for a detailed analysis increases as opposed to a once-over-lightly or a specific answer. Stress on the depth of information in the system should be placed on detailed analysis type of information.

- c. Media vs. Desired Depth of Information: desired depth or level of informational need does not vary with the type of media. It appears, and is so stated in the study, that the level of informational need is a subjective matter in the mind of the user. Superficially, it would appear that certain media would provide specific answers while other media would better serve the purpose of an overview of a subject. This, however, is a weak assumption because this characteristic is determined by the user and is not inherent in the conveyor of the information. A map of a city, for instance, is most commonly used to locate a specific street but, depending on the user, its use could be a study of the arrangement of the city with emphasis on an overview for city planning.
- d. <u>Desired Exposure to Information vs Desired Depth of Information</u>: In general, the fewer the documents requested or wanted by the user the more specific the answer will be that is being sought.
- e. <u>Desired Depth of Information vs First Source</u>:
 The depth of information needed by the user does not dictate his choice of first source. He will use his local informal information sources first, independent of the level of information he is seeking.
- f. Nature of Task vs. Depth of Information Wanted: The nature of a user's task or its output does not influence the level of the information needed by the user in any specific way.

5.2 Analysis of "DOD User Needs Study" Results

The length of time of a task was shown to affect the level of information needed. As the length of the task increased, the user's need for detailed analysis information increased. It must be assumed that a cut-off point would be reached after a certain length of time. More

importantly, but not substantiated by the <u>DOD User Needs</u> is the need for a certain level of information at specific stages during the duration of the task. It would appear to be true that at the onset of a task a user would need general information. Once the task was started, detailed analysis information would play an important part, while specific answers would be needed as the task approaches completion. Another factor influencing the depth of information wanted by the user is the number of documents requested. The fewer the number of documents requested the more likely a specific answer is being sought.

5.3 Conclusions

Based on the results of the <u>DOD User Needs Study</u>, it can be concluded that the level of information need is not influenced by any particular segment of the RDT&E cycle or types and kinds of tasks a user is performing. It is further concluded that the depth of information wanted is in the mind of the user and cannot be related in any significant way to the information or its media. However, there are a few corollaries that can be stated about the user and the level of his informational need that have implications for the design of EDIS.

5.4 Implications for EDIS Design

Since a detailed analysis is being sought almost fifty percent of the time, EDIS should orient itself and its information sources to meet the detailed analysis type of request.

Two parameters that would be useful for EDIS to monitor, to provide the user with the level of information he is seeking, are the following. First, the question should be analyzed as to the level of information the user needs. The results of the search should then be matched with that analysis in an attempt to assure customer or user satisfaction. The second parameter is the number of documents requested. If the number of documents requested is small, it would indicate that the searcher is looking for a specific answer.

Success of an information system is dependent upon making the user go to that system as his first source. The level of information needed by the user, however, does not influence his choice in selection of his first source. If the answer to a request corresponds to the level of information desired by the user, using the above stated parameters, his choice of first source may be aided to a large degree in utilizing the information system as opposed to his local environment, i.e. colleagues, personal files or office files.

Time response is one of the most important considerations in the design of a information system. If the response time is slow, the system tends to become discredited in the eyes of the user, and it will cease to be utilized by the user except as a last recourse. Our concern in this study is determining how rapid an information system must be to satisfy the request of the person who seeks information.

6.1 Results of the "DOD User Needs Study"

The <u>DOD User Needs Study</u> shows the relationship between the sources used and the time elapsed in obtaining the information. The report states:

"when information is obtained in less than a day, the department bookcase and personal files are commonly used as the first source. When information is obtained in less than one week, colleagues and manufacturers are commonly used as the first source. When information is obtained in one week or more, the library is used to some extent."

It is important to note that the time response of information centers was not included in the statement because of the small number of responders who used this information resource.

Concerning desired retrieval time, the report states that "when the information is desired in less than one

³Op. Cit., P. 6-108

week, colleagues, one's own collection, and department files seem to be heavily used as a first source of information. As the retrieval time increases, there is a tendency to assign a subordinate to locate the required information." Also, as the desired retrieval time increases, there is no indication that the reliance on information centers increases. The report states that "information was generally obtained in less than the allowable time." This would indicate that a high speed information system would add little in terms of the user's need for rapid retrieval. But the report goes on to state that "the time requirement observed may not be too significant, because people tend to adjust their time requirement for information to the existing system."

In the study on user requirements of chemists in the Army, ⁷ Charlotte Smith states that "In all cases, the users claimed to have gotten the information in time for it to be useful." In this case, however, only two of the eighty-two persons interviewed had an imposed deadline to meet.

These statements can be understood when one considers the length of time of a person's task. Over fifty percent of the tasks investigated by the DOD survey took one to five man-days to complete. This, however, is not the

Op. Cit., P. 6-108

⁵Ibid., P. 1-11

⁶Ibid., P. 1-11

⁷Charlotte Smith, <u>User Requirements for Chemical Information and Data System (CIDS)</u>, April 1965, P. 8.

amount of elapsed time spent to complete the task. Because a person was working on a task only part-time, the amount of elapsed time to complete the job was much greater, i.e., if a job took five man-days to complete but was worked on only one quarter or each day, the amount of elapsed time would actually be four weeks. An interesting question regarding these findings is: If the individual had all of the relevant information at the beginning of the task, would he have completed his work in a shorter period of elapsed time? The answer to this question is not available in the report. But it is reasonable to hypothesize that, if the information were available at the beginning of the task, the amount of elapsed time would be reduced even though the actual time spent on the task might remain the same.

6.2 Conclusions and Recommendations

To achieve this goal of providing information at the beginning of a person's assignment requires a rapid response time. Since more than fifty percent of the tasks performed by RDT&E personnel in DOD take five man-days, and, assuming a similar percentage for Army RDT&E personnel, it is recommended that the response time of EDIS be 48 hours or less to answer a request. Satisfying this requirement would achieve the following:

a. Minimize the amount of elapsed time (as opposed to actual time) in doing a task that is dependent upon obtaining information at the beginning of an assignment.

- b. The reliance on local information sources would not be threatened, but complemented, establishing a proper balance between the information sources of one's local environment and external information resources.
- c. Establish user's confidence in the information system and assure his continued use of it.

It is recommended that a study be conducted of a number of successful information systems in operation which have had a number of ever-increasing requests. Included in the survey should be a number of unsuccessful information systems or systems which have not had an appreciable increase in requests to determine if a slow time response is responsible for the lack of utilization of the system. This study would achieve the following:

- a. Establish the importance of time response to the user.
- b. Determine the allowable time response possible of an information system before its effectiveness begins to be compromised.
- c. Determine other user needs by analyzing what each system provides its users in order for it to be successful.

Personnel in the Army RDT&E community are associated with items through past experience as well as in their current assignment. Categorization of these RDT&E personnel by items could benefit EDIS by indicating the specific items of interest and the associated number of personnel.

7.1 Availability of Item Category Information

In the <u>DOD User Needs Study</u> an attempt was made to breakdown a person's field of activity by item-oriented categories. However, the attempt was unsuccessful because each category represented too few respondents to be meaningful. The TEL/TIPS Survey did not attempt to categorize Army RDT&E personnel by item. Information on the functions of Army installations in Section 10.0 of this report indicates items of collective interest to the personnel at each installation. But a comprehensive list of items of interest to each user is not available.

7.2 Conclusions and Recommendations

In many instances a user requesting information will structure his question around an item of interest. To satisfy such item-oriented questions, EDIS must provide in its common language a means to determine the data banks which contain information about these items. If item-oriented information about the user could be gathered at a minimal cost, it should be obtained. This information would provide a useful input to the development of the EDIS common language.

8.0

In this section, the following factors and their relationship to user needs are discussed.

- Method of acquiring technical information
- Awareness of the existence of information services b.
- Identification of current R&D projects C.

8.1 Methods of Acquiring Technical Information

How a person goes about acquiring and utilizing scientific and technical information does not necessarily reflect his needs for information or information services. His present methods reflect in sum his past experience in collecting information and his judgement as to what he considers the best path to follow in order to achieve his present task. This path might include altering his task slightly to fit the information that is within his reach, or it might include, for the lack of existing information, varying the methods used to accomplish the task. Depending on the accessibility of the information, that is, the ease or difficulty in acquiring the information, he will make compromises in his task and in his efforts to collect the pertinent information.

A person's past experience in collecting information and the compromises that are made to accomplish his task due to information problems he encounters affect the answers he gives to any user need study. In this analysis of the results of the DOD User Needs Study, these two factors have been considered.

The results of the survey indicate that "the user tended to rely heavily on his local environment as a first source of information" while libraries and information centers were seldom used as a first source. ⁸ The survey shows that 51 percent actually used this local environment as a first source. The conclusion drawn from this information is that it "tends to confirm the existence and significance of an informal information system consisting of user's personal files, his colleagues, and other local sources of information." ⁹

In spite of the significance of the local sources, 49 percent of the persons surveyed used means other than local sources to satisfy their information needs. Moreover, only 50 percent of those persons that did use their local sources received all the information requested. The remainder received only part of the information, were referred to other sources, or received no information. It, therefore, appears that there is a heavy reliance on external sources to the degree that 70% of the information requested comes from sources other than colleagues, personal files and departmental files. These results indicate a strong need for an information system that incorporates those qualities that cause a user to go to his local sources first.

The <u>DOD User Needs Study</u> has uncovered just what these qualities are. The report shows that a requestor

^{90,} Cit., P. B-27, question 42 1bid. P. 1-15

uses his local sources first because he considers them:

- (1) the most authoritative; (2) previously found helpful:
- (3) easily available; or (4) the only source known. The first three of these characteristics are precisely the ones an information system should provide its users. These characteristics represent needs of the user of data and information which should be met by EDIS.

8.2 Awareness of the Existence of Information Services

The DOD User Needs Study states that formal information systems were not widely utilized. One reason for this situation was the lack of awareness of the existence of these services. Concerning this problem the report states: "A considerable proportion (21 percent) of the RDT&E personnel were unaware of the existence of the Defense Documentation Center (DDC). A similar proportion (19 percent) were unaware of the existence of any one of 33 specified DOD specialized information centers." 10 A strong effort to publicize these formal information systems, as advocated by the DOD User Needs Study, is not the answer because it places the burden on the individual members of the RDT&E community to become and remain aware of these services. A more effective utilization of these information systems will result from an information network such as EDIS. EDIS' knowledge of the total number of information systems within its assigned sphere will

¹⁰ DOD User Needs Study, P. 1-13

lift the responsibility from the user, provide more comprehensive searches, and enhance the use of these systems by enlarging their community of users.

8.3 Identification of Current R&D Projects

The <u>DOD User Needs Study</u> states that an information problem exists in the identification of current R&D projects in progress. The resolution of this problem could be achieved, <u>not</u> by advertising the existence of such a system as Science Information Exchange (SIE), whose sole responsibility is to monitor R&D projects in progress, but by interfacing EDIS with that system. EDIS should not try to perform what is already being accomplished, but should utilize existent systems to the greatest extent possible for answering requests from EDIS users.

The identification of R&D projects could also be accomplished in the Army by interfacing the DD 1498 project reporting system with EDIS. This would create an in-house capability to inform those users who have a need to know the current R&D efforts being conducted by the Army.

9.0 IDENTIFICATION OF USERS BY DISCIPLINE AND SUBJECT FIELD

In this section the use of scientific and technical information in the Army RDT&E community are identified by discipline and field. Data is presented in tabular format showing the number of users at each installation. Table 9.1 presents data classifying users by discipline; individual tables (9.2-9.10) are included for each discipline showing data on users by subject fields at each installation.

The tables were developed from data compiled from the TEL/TIPS Survey conducted as part of the On-Site STINFO Survey. Although the survey is two years old, the percentages of Army personnel in each discipline should not have changed significantly during that time period. Due to minor errors found in the TEL/TIPS listing of subject fields, some adjustments had to be made in preparing the tables. Because of the large number of Army personnel covered by the survey (over 13,000), these adjustments do not have any appreciable effect on the data.

The information in the following tables is presented for use in the design of EDIS. In succeeding work units of Task I this information will be correlated with the information on holdings and existing data systems at each location to determine the installation's information strengths and weaknesses.

9.1 Table of Users by Discipline at Army Installations

Table 9.1 shows the number of personnel assignments in each discipline at the 48 Army installations included in the TEL/TIPS Survey. The number of assignments in each discipline does not reflect the actual number of scientific and technical personnel at each location. This table is based on the number of current assignments each of which require at Least 30 percent of a person's time. It is possible, therefore, to have a person's current assignment reflected in more than one discipline.

To adequately indicate the number of possible users in any one discipline, it was necessary to select an arbitrary percent of a person's time spent on an assignment. Thirty percent was chosen because higher percentages would tend to eliminate persons who have a legitimate need for information within a discipline. On the other hand, assignments that require less than thirty percent of a person's time might inflate the interest within a particular discipline.* This could produce a false parameter in terms of the number of personnel whose current assignment falls within that discipline.

The total number of personnel within the Army whose current assignments fall within each discipline is shown at the end of the table along with the corresponding percentage of all assignments represented by the disciplines.

^{*}The TEL/TIPS Survey included current assignment percentages from 1% to 100%.

The last column in the table shows the actual number of scientific and technical personnel at each location as reported by the TEL/TIPS Survey. The installations are presented in descending order from the installation with the highest number of RDT&E personnel to the lowest.

It is observed from Table 9.1 that over fifty-three percent of the assignments of Army RDT&E personnel are in the Engineering discipline. No other discipline accounts for more than twelve percent of the RDT&E assignments.

TABLE 9.1 USERS BY DISCIPLINE AT ARMY INSTALLATIONS

**************************************	Discipline										
INSTA	LLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
Munition Headquar Sp. Proj	Arsenal, N.J. s Command Hqs. ters . Selected	¥ 1	2 -	8 206	- 6	30 1253	2 84	_ 104	- 17	2 27	55 1513
Ammo		-	-	-		6	_	-	-	_	8
	Totals	-	2	214	6	1289	86	104	17	29	1576
Electron U.S. Arm Electron Sp. Proj Sp. Proj Sp. Proj Sp. Proj Sp. Proj	e Comm. Agency ics Command Hqs y Patent Agency ics R&D Labs . AACOMS . AN/VRC-12 . MQM-58A		- 6 - - -	- 81 - - -	- 2 - 55 - - - - 1	52 23 1 1025 4 8 8 5	2 1 - 54 1 - 1 1 8	- 2 1 286 - - - - -	1 -	5 - 3 11 - 1 2	63 30 10 1331 6 6 13 9
ľ	Totals	2	6	81	58	1137	69	304	1	22	1496
3. White Sand Range, N Headquar Electron Activity	ters ics R&D	-	3	4	5 45	453 169	158 34	68 69	10 -	10	843 300
	Totals		3	7	50	622	192	137	10	22	1143

TABLE 9.1 (Continued)

	Discipline										
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel	
4. Aberdeen P.G., Md. Ballistics Rsch. Labs. Human Engr. Labs. Coating & Chem. Labs. Test & Eval. Cmd. Hqs. Headquarters Limited War Labs. Ordnance Agency	1 - - - -	- 1 - - -	44 - 60 - 1 3	25 - - - 2 -	136 54 2 39 213 16 1	108 3 - 6 3 7	126 14 - 1 15 3	1 20 - - - - -	2 - 1	406 89 41 66 227 37 4	
. Totals	1	1	108	27	461	127	159	21	10	B70	
5. Redstone Ars., Hunts- ville, Ala. Missile Cmd. Hq. Missile Spt. Cmd.	<u>-</u>	- -	69 35	1 13	284 206	17 32	32 55	-	•	451 406	
Totals	-	-	104	14	490	49	87	-	11	B 57	
6. Edgewood Arsenal, Md. Nuclear Defense Lab Headquarters Chemical R&D Labs Environmental Hyg. Agency		- 5 136	16 10 252	7 - 3	11 44 100	3 20 46	29 - 47	1 - 17 -	3 7 12	63 94 512	
Totals		144	278	10	159	69	77	18		682	
7. Harry Diamond Lab, Washington, D. C.	1	9	40	12	432	33	124	8		610	

TABLE 9.1 (Continued)

		,		Di	scipli	ne					
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Fsychology	Social Science	No. of Personnel	
8. Ft. Belvoir, Va. Engr. R&D Labs Engr. GIMRADA Combat Dev. Cmd. Hq. Engr. Cntr. & School Army Management School	1 3 - -	8 - - -	43 3	7 60 - -	336 20 1 -	10 3 30 - 1	83 5 - -	5 - - 3 -	1 2 4 1	447 107 44 5	
Totals	4	8	46	67	357	44	87	8	9	608	
9. Frankford Arsenal, Phila., Pa.	-	4	52	3	336	23	102	8	23	505	
10. Ft. Detrick, Md. Biological Labs Medical Unit	- -	410 34	34	6 -	46 -	27 -	14 -	1 -	14	446 36	
Totals	_	444	87	6	46	27	14	1	14	482	
Walter Reed Gen. Hospital, Washington, D. C. Walter Reed Gen. Hospital Regional Dental Activity Med. R&D Cmd. Hqs. Inst. of Dental Rsch.	- - -	15 - 19 9	3 - - 3		- 1 1	-	3 - 1 1	1 - -	7 3 2 3	50 3 18 15	
Army Inst. of Research	_	226	107	_	9	2	25	20	14	283	
Prosthetics Rsch Lab Armed Forces Inst of Path WRAMC	-	1 62	16 6	-	16 -	- 1	- 4	- 1	2	29 61	
Armed Forces Pest Con-	 										
trol Bd.	_	3			-	_	-	_	_	4	
Totals	-	335	135	-	27	3	34	22	32	463	

TABLE 9.1 (Continued)

				Di:	scipli	ne				
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
2. Natick, Mass. Natick Lab Hqs. Inst. of Envir. Med.	-	30 17	184 4	25 -	152 -	8 1	35 3	4 8	9 2	415 36
Totals	_	47	188	25	152	9	38	12	11	451
3. Detroit Arsenal, Warren, Mich. Tank & Auto Center	-	- 1	- 19	- 3	6 439	- 13	- 16	- 3	- 3	10 393
Totals	_	1	19	3	445	13	16	3	3	403
4. Ft. Huachuca, Ariz. Sys.Des.&Eng.Div.CCIS-70 Electronics Proving Grd. Electronics R&D Activity CCIS Group Com-Elect Agency	1 1 1 1	- 4 4 - -	- - - 3	- 12 29 - 1	12 87 40 - 4	1 13 - 2 3	- 6 2 -	- 6 - 1	- 16 1 - 6	16 179 78 3
Totals	_	8	3	42	143	19	8	7	23	302
5. Watertown Arsenal, Mass. Mat'l. Research Agency Headquarters	1 -	1 -	39 1	2	136 60	8 -	45 -	1 -	12	205 66
Totals	1	1	40	2	196	8	45	1	19	271
5. Engr. Waterways Exper. , Sta., Vicksburg, Miss.	_	2	10	31	205	18	20	2	14	269

TABLE 9.1 (Continued)

				Di	scipl	ine				
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
17. Washington, D. C. , AMC Hqs. Sp. Proj. Acft. Weapnzn Sp. Proj. Chinook Sp. Proj. Fire Spt	- - -	3 - -	12 -	3 -	78 1 4	6 - -	31 - -	4 - -	4 -	149 2 5
Sp. Proj. Fire Spt. Aerl. Sys. Sp. Proj. Iroquois Sp. Proj. Loh Sp. Proj. Mohawk Sp. Proj. NBC Sp. Proj. Specl Warfare Director of Army Rsch. OCRD	- - - - -	- - - - -	- - - - - 2	- - - - - 2	- 1 2 - - -	- - - - - - 4	- - - - -	- - - - -	- - - - -	4 - - - - 43
Totals		4	14	5	90	10	32	10	8	212
18. Watervliet Arsenal, New York Headquarters	-	-	16	1	156	19	19	3	1	205
19. Rock Island Arsenal, Ill. Weapons Comd. Hqs. Rock Island Arsenal	-	1	- 78	1 1	29 84	2 3	- 3	- 1	5 1	38 124
Totals	-	-	78	-	113	5	3	1	6	162
						_				

TABLE 9.1 (Continued)

X			·	Di	scipli	ine		والمستوالية والمستوالية والمستوالية والمستوالية والمستوالية والمستوالية والمستوالية والمستوالية والمستوالية وا		
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
20. Ft. Eustis, Va. Transportation Rsch Cmd. Transportation Board Transportation Agency	-	-	- - -	- - -	102 5 1	6 - 1	2 - -	0 - -	2 - -	126 11 19
Totals	-	-	-	-	108	7	2	-	2	156
21. Springfield Armory, Mass. Headquarters	-	-	4	-	130	6	5	_	-	148
22. Ft. Sam Houston, Texas Brooke Gen. Hospital Med Fld Svc School BAMC Surgical Rsch Unit, BAMC Medical Svc Agency	1 1 1	10 7 24 1	- 1 9 -	1 1 1	- - - 1	- - - 1	-	10 - 2 -	3 - - 1	15 7 98 9
Totals	-	42	10	-	1	1	1	12	4	129
23. Yuma Proving Ground, Ariz. Headquarters Electronics PG Test Act Army Metro Team	- - -	- - -	6 - 3	7 -	64 7 -	5 1 -	3 - -	1 - -	13 1 -	111 12 4
Totals	-	-	9	7	71	6	3	1	14	127
_24. Dugway Proving Ground, Utah Headquarters	-	46	46	13	15	18	2	•	10	120

TABLE 9.1 (Continued)

Ì				Di	scipl:	ine				
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
5. Ft. Knox, Ky. Armor Board Med Rsch Lab Armor Agency Human Rsch Unit	1 1 1	- 21 - -	1 20 1 -	- - -	15 - 11 2	- 1 4 -	1 5 1	3 15 3 14	1 - 4 -	33 44 25 18
Totals	_	21	22	-	28	5	7	35	5	120
26. Letterman General Hosp. San Francisco, Calif.	-	71	5	-	-	-	1	6	2	115
27. Hanover, N. H. Cold Regions R&E Lab.	-	3	4	37	52	1	17	-	3	110
28. St. Louis, Mo. Air & Surface Mat. Comd.	-	2	1	2	78	2	1	1	3	101
29. Pine Bluff Arsenal, Ark. Headquarters	-	35	4	-	24	5	-		-	91
30. Ft. McClellan, Ala. Chem-Bio-Rad. Agency Chemical Ctr & School	-	5 1	13 4	- 6	1 -	11 1	2 4	- 5	3 7	55 34
Totals	-	6	1,	6	1	12	6	5	10	89

TABLE 9.1 (Continued)

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				Dis	scipli	ne				
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
Holloman AFB, New Mexico Telecomputing Service Inc. Dynalectron Corp	-	-	-		24 17	34	3 4	-	1 -	64 24
Totals	-	_	-	-	41	34	7	-	1	88
2. Ft. Lewis, Washington Madigan Gen. Hospital	-	17	3	-	4	-	10	8	12	76
Infantry Board Combat Oper. Rsch. Grp. Infantry Agency Human Rsch. Unit		- - -	1 1 1		- 2 2 -	- 7 3 5	- - -	- 1 2 30	- 1 1	5 11 29 20
Totals	_	-	-	-	4	15	-	33	2	65
34. Ft. Lee, Va. QM. Rsch & Engr.Fld. Eval. Agency	-	-	11	2	26	4	-	1	1	49
35. Med. Rsch & Nutrition Lab., Denver, Colo. Med. Rsch & Nutri. Lab.	-	27	14	-	-	1	-	-	-	43

TABLE 9.1 (Continued)

		· · · · · · ·		Di	scipl:	ne				
INSTALLATION	Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
36. Ft. Bliss, Texas Air Defense Bd. Nuclear Group Hqs. Air Defense Agency	-	-	- - -	2 - -	5 2 4	2 6 4	1 2 -	1 - -	- - 1	10 19 12
Totals	-	-	_	2	11	12	3	1	1	41
37. Ft. Bragg, N. C. Airborne Elec. & Spec. Welfare Bd. Special Warfare Agency	-	- 1	- 1	- -	14 4	- 1	-	<u>-</u>	- -	25 7
Totals	-	1	1	-	18	1	-	-	-	32
38. Ft. Douglas, Utah Desert Test Cntr.	-	4	8	1	5	1	-	2	3	31
39. Ohio River Div. Lab, Cinn., Ohio Ohio River Div. Lab	-	-	2	6	21	-	1	-	-	29
40. Army Research Office, Durham, N. C. Army Research Office	-	-	2	-	5	4	1	-	5	28
41. Ft. Ord, Calif. Combat Dev. Comd. Exper. Cntr.	-	-	-	-	8	15	-	-	1	26

TABLE 9.1 (Continued)

Discipline											
Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel		
	- 2 -		1 1 1	11 - -	- - 1	-	- - 6	- 1 -	11 2 11		
	2	-	-	11	1	-	6	1	24		
-	-		-	23	_	-	-		16		
_	-	2		12	2	-		-	16		
-	-	-	-	10	-	. 1	-	-	16		
-	-	-	-	-	-			2 5	5 7		
_			**	_	-	-	-	7	12		
l	-	-	-	6	-	4	-	-	ક		
	, i i i Astronomy	- 2	- 2 2 2 2	## ## ## ## ## ## ## ## ## ## ## ## ##	11 - 2 11 - 2 12 10 10	11 1 12 2 10	11 1 1 1 1 1	Astrono 11 1 - 6 12 2 6 11 1 - 6 11 1 - 6 11 1 - 6 11 1 - 6 1 1 1 - 6 1 1 1 - 6	Ou		

TABLE 9.1 (Continued)

			Di	scipli	ne				
Astronomy	Biology	Chemistry	Earth Science	Engineering	Math & Statistics	Physics	Psychology	Social Science	No. of Personnel
-	1	<u>-</u>	•	-	-	-	-	_	1
9	1297	1683	458	7572	964	1477	262	370	474
0.1	9.2	11.9	3.3	53.6	6.9	10.5	1.9	2.6	
	9	- 1 9 1297	9 1297 1683	Astronomy Biology Chemistry Earth Science	Astronomy b Astronomy Local Biology Chemistry Resp. Chemistry Barth Science Carth Science Engineering	Astronomy	Astronomy 1 Biology 1 Chemistry 1 Earth Science 1 Earth Science 1 Hath & Statistics	## Physics Psychology Astronomy Astronomy Biology Chemistry Earth Science Earth Science Astronomy Figure Farth Science Figure Figure	Astronomy - Astronomy - Chemistry - Chemistry - Earth Science - Math & Statistics - Physics - Social Science

9.2 Tables of Users by Subject Field at Army Installations

The following tables present further information on user disciplines compiled from the TEL/TIPS Survey. For each of the disciplines practiced by the Army RDT&R community, data is provided which shows the number of assignments (based on 30% or more of a person's time) in each field for each installation. Figures are also shown for the total number of users in each subject field.

The data developed in this table has been used in preparing the geographic distribution of users presented in Section 11.9. The tables have also been used for comparing subject fields of users with Army installation function/missions (see Section 10.0). Additionally, this data will be correlated with the information on D&I holdings and existing data systems in the succeeding work units of KDIS Task I.

Astronomy, Other		5
Stellar Energy sources		
Star Systems and Statistical Astronomy		
Spectroscopy of Astro-		
Radio Astronomy		
Physics of the Sun	-	7
Physics of the Inter- stellar Medium		
Physics of Planets, Satellites	·	
Photoelectric Photometry		
Navigation, Geodetic Astronomy		
Design of Astronomical Instruments	N	2
coswojodk	ч	1
Совтодопу		
Celestial Mechanics		
Аѕсторруѕісѕ		
Astrometry		
ASTRONOMY	1. Ft. Monmouth, N.J. Electronics R&D Labs 2. Aberdeen P.G., Md. Ballistics Research Lab 3. Harry Diamond Lab. Washington, D.C. 4. Ft. Belvoir, Va. Engineering R&D Lab Engineering GIMRADA 5. Watertown Arsenal, Massachusetts Mat'l Research Ag.	TOTALS

Table 9.2 DISTRIBUTION OF USERS IN FIELDS OF ASTRONOMY BY INSTALLATION

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and Wildlife								
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·04%	Virol							
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ясогодҳ	Бряки					56	l	
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трогодх	Paras							,
tion & Metabolism	Nutri							
одх	Мусод			7				
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ρτοτοάχ	Нудго							
səţ	дәиә၅							
отодх	Епсош							
dλ	Есојо							
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Жш	Anato	4.				17	т	
BIOLOGY	INSTALLATION	 Picatinny Arsenal, New Jersey Munitions Comd. Hqs 	2. Tt. Monmouth, N.J. Electronics R&D Lab	3. White Sands Missile Range N. M. Headquarters	4. Aberdeen P.G., Md. Human Engr. Labs	5. Edgewood Arsenal, Md Headquarters Chemical R&D Lab Environmental Hq.	6. Harry Diamond Lab Washington, D.C.	7. Ft. Belvoir Engr. R&D Labs
		l						

Table 9.3 DISTRIBUTION OF USERS IN FIELDS OF BIOLOGY BY INSTALLATION

Other Biological Specialties		129	8	т 9 1		1 0	ľ
Horticulture		7					
Science							
Fish and Wildlife Forestry and Range			· · · · · · · · · · · · · · · · · · ·			<u> </u>	
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ydrouowk gug ydrofodk		m	•				
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ьуλсобясуо году		16					
Бһуяіододу		Я	ဖ္က	54		13 3	
Браттасогоду			H	4			
ьягрогоду	1	σ σ	20.01	11	51	ч	
Parasitology			7	7			
Mutrition & Metabolism				16			
улсогоду	77	4		-		Ŋ	
Wicrobiology		65	н (41		11	Н
Immunology		24	н	22	н	н	
Ηλαιορτοσολ							
gener j sa		14	н	9			
πυτομοτοάγ		15	٦	7	ო	4	
Есолоду		н		п			,
Воѓзиу		12	Н			7	
Bacteriology		37	н	17		4	
Апатот		7 7	4 H	7	īŪ		
BIOLOGY INSTALLATION	8. Frankford Arsenal Philadelphia, Pa.	 Ft. Detrick, Md. Biological Labs Medical Unit 	H H	or Denta Inst of hetic Rs -	Armed Forces Inst. Pathology Armed Forces Pest Control Board	ll. Natick, Mass. Natick Lab Hgs. Inst of Envir Med.	12. Detroit Arsenal, Warren, Michigan Tank & Auto Center

(Cont.) DISTRIBUTION OF USERS IN FIELDS OF BIOLOGY BY INSTALLATION Table 9.3

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Ofher Biological

Horticulture

Forestry and Range Science								
Fish and Wildlife	4							
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ydrouowy and Adrology								
ZooJody								
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Mutrition & Metabolism		-		,			rd	
w\cojod\								7
Місторіодоу	н	-	-			7	7	9
Immunology	П						ო	သ
Нудгоріо Году								
Genetics								
Ептошотоду						Н		
Есојоду								
Вогапу			 			-		н
Вастетіолоду			-				4	7
УmotenA					Ŋ		٦	
BIOLOGY INSTALLATION	13. Ft. Huachuca, Ariz. Electronics P. G. Electronics R&D Act	14. Watertown Ars, Mass. Nat'l Rsch. Agency	15. Engr Waterways Exper Station, Vickburg, Mississippi	16. Washington, D.C. AMC Headquarters Director of Army Research, OCRD	17. Ft Sam Houston, Tex. Brooke Gen. Hosp.	School, BAMC		18. Dugway P. G., Utah Headquarters

DISTRIBUTION OF USERS IN FIELDS OF BIOLOGY BY INSTALLATION

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Table 9.3 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF BIOLOGY BY INSTALLATION

Other Biological Specialties	т т	280
Horticulture		1
Forestry and Range Science		2
Fish and Wildlife		2
Animal Husbandry	1 1	14
Agronomy and Agrology		7
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Λίτολοσγ		109
Бууторатрододу		18
Physiology	1 9	139
Брятшясогоду		84
ьверогоду	4	138
Parasitology		9
Mutrition & Metabolism	14	31
WYcology		16
Microbiology	2 2	174
Immunology		71
Ηγάτουίο Ιοσγ		
Genetics		21
Епсомојоду		32
Есојоду	1	4
Воѓапу		1.9
gscferiology	1	76
Апатоту		44
BIOLOGY	26. Med. Research & Nutrition Lab, Denver, Colorado Med. Aesearch & Nutrition Lab 27. Ft. Bragg, N. C. Special Warfare Ag. 28. Ft. Douglas, Utah Desert Test Center 29. Ft. Rucker, Ala. Aeromed Rsch. Unit 30. Valley Forge General Hospital, Phoenix- ville, Pennsylvania General Hospital	TOTALS

Table 9.3 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF BIOLOGY BY INSTALLATION

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Physical Chemistry

Organic Chemistry

Inorganic Chemistry

Agriculture and Food

Analytical Chemistry

Biochemistry

Chemistry

Pharmaceutical Chemistry

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1. Picatinny Arsenal, M.J. Munitions Comd. Hqs. Headquarters	2. Ft. Monmouth, N. J. Electronics R&D Labs	3. White Sands Msl Range, New Mexico Headquarters Electronic R&D Activity	4. Aberdeen P.G., Maryland Ballistics Rsch. Labs Coating & Chem. Labs Headquarters Limited War Labs	5. Redstone Arsenal, Huntsville, Alabama Missile Command Hqs. Missile Support Comd.

DISTRIBUTION OF USERS IN FIELDS OF CHEMISTRY BY INSTALLATION

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Physical Chemistry	('nН	25	20	18	23	11		ч 4	2
Organic Chemistry	•	4	43	13	14	16	12		21	14
Inorganic Chemistry			က	4	-	7	дд	H	-	
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Agriculture and Food Chemistry				1			7		7	
Analytical Chemistry	,	0	64	7	10	œ	10		1 16	1 1
CHEMISTRY	6. Edgewood Arsenal, Md.	Nuclear Verense Lab Headquarters	Chemical R&D Labs	7. Harry Diamond Lab. Washington, D. C.	8. Ft. Belvoir, Virginia Engineering R&D Labs Engineering GIMRADA	Frankford Arsenal, Philadelphia, Pa.	<pre>10. Ft. Detrick, Maryland Biological Labs Medical Unit</pre>	<pre>11. Walter Reed Gen Hosp., Washington, D. C. Walter Reed Gen. Hosp. Inst of Dental Rsch.,</pre>	Army Inst. of Rsch.	Prosthetics Rsch. Lab Armed Forces Inst. of Pathology

(Cont.) DISTRIBUTION OF USERS IN FIELDS OF CHEMISTRY BY INSTALLATION Table 9.4

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Other Chemistry

Pharmaceutical Chemistry

Physical Chemistry

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Inorganic Chemistry

Agriculture and Food

Analytical Chemistry

Biochemistry

Chemistry

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Ft. Huachuca, Arizona Com-Elect. Agency	7			rd				
Watertown Arsenal, Mass. National Rsch. Agency Headquarters	12			m	2	19		
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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF CHEMISTRY BY INSTALLATION Table 9.4

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Agriculture and Food	-							
Analytical Chemistry	'n	rd		-	4	п	7	1
CHEMISTRY	19. Rock Island Ars., Ill. Rock Island Arsenal	20. Springfield Armory, Mass. Headquarters	21. Ft. Sam Houston, Texas Med. Field Service School, BAMC Surgical Rsch Unit, BAMC	22. Yuma P. G., Yuma, Ariz. Headquarters Army Metro Team	23. Dugway P. G., Utah Headquarters	24. Ft. Knox, Kentucky Armor Board Med. Rsch. Lab	25. Presidio of San Fran. Letterman Gen. Hosp.	26. Hanover, New Hampshire Cold Regions R&E Lab.

Table 9.4 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF CHEMISTRY BY INSTALLATION

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Organic Chemistry				-	φ	rH	
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Agriculture and Food Chemistry					4		
Analytical Chemistry		7			1	Н	
CHEMISTRY	27. St. Louis, Missouri Air & Surface Mat'l	Command 28. Pine bluff Ars., Ark. Headquarters	29. Ft. McClellan, Alabama Chem-Bio-Rad. Agency Chemical Center & Sch.	30. Ft. Lewis, Washington Madigan General Hosp.	31. Ft. Lee, Virginia OM Rsch & Engr. Field Eval. Agency	32. Med. Rsch & Mutrition Lab, Denver, Colorado Med. Rsch & Nutrition Lab	33. Ft. Bragg, N. C. Special Warfare Agency

(Cont.) DISTRIBUTION OF USERS IN FIELDS OF CHEMISTRY BY INSTALLATION Table 9.4

CHEMISTRY

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Pharmaceutical Chemistry 361 Physical Chemistry 498 Organic Chemistry 108 Inorganic Chemistry 191 втосуештаска Chemistry 48 Agriculture and Food 251 Analytical Chemistry Ohio River Division Lab Army Rsch Office, Durham, North Carolina Army Research Office Ohio River Div. Lab Med. Equip. R&D Lab Ft. Totten, New York Desert Test Center 34. Ft. Douglas, Utah Cincinnati, Ohio

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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF CHEMISTRY BY INSTALLATION Table 9.4

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<b>₩</b>	Area Specializations				н			
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•	Atmospheric Dynamics, Chemistry and Physics	2	12	3.2	16	7	7 7	4
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	EARTH SCIENCE	Picatinny Ars Headquarters	Ft. Monmouth, Electronics Electronics Signal Radio Agency	White Sonds M New Mexico Headquarters Electronics	Aberdeen P. Ballistics Limited War	Redstone Ars Huntsville, Msl. Cmd. F	Edgewood Nuclear Chem. R&	Harry Diamond Labs Washington, D. C.
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## EARTH SCIENCE

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	Belvoir, Va.       1       2         jr. R&D Labs       1       2         jr. GIMRADA       2       2	Belvoir, Va.       1       2         fr. R&D Labs       1       2         fr. GIMRADA       2       2         ikford Arsenal, a., Pa.       2       2	Belvoir, Va.  jr. R&D Labs  jr. R&D Labs  jr. GIMRADA  jr. GIMRADA  kford Arsenal, a., Pa.  Det 'ck, Md.  2  2  2  2  2  2  2  3  2  2  2  2  2	Belvoir, Va.	1   2   2   4   4   4   5   5   5   5   5   5   5	Belvoir, Va.   1   2   2   4   4   4   4   5   5   5   5   5   5

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Chemistry and Physics

EARTH SCIENCE

Atmospheric Dynamics,

Photogrammetry, grato-graphy and Photo-interpretation

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**Geodzaphy** 

Geophysics

Solid Earth

Paleobotany

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Instrumentation

Meteorological

Weteorology

Climatology

Area Specializations

Paleontology and

INSTALLATION

Engr. Waterway Exper Vicksburg, Mass. Station 15.

Dir. of Army Rsch. Washington, D. C. AMC Hqs. 16.

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Watervliet Arsenal Headquarters New York 17.

Yuma P. G., Ariz. Headquarters 18.

Dugway P. G., Utah Headquarters 19.

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Cold Regious R&E Lab Hanover, N. H. 20.

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DISTRIBUTION OF USERS IN FIELDS OF EARTH SCIENCE BY INSTALLATION (Cont.) Table 9.5

Paleontology and Paleobotany Solid Earth	Area Specializations  Meteorological Instrumentation Geodesy Geology  Deleobotany  Deleobotany
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Hydrology	
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Table 9.5 (Cont.) LISTRIBUTION OF USERS IN FIELDS OF EARTH SCIENCE BY INSTALLATION

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Mining and Petroleum Engineering		1														
Metallurgy and Engr.		19			Ī		7		-							
Mechanical Engr.		87		1			99	1							0	7
Materials Engr.		16					4									
Marine Engineering																
Internal Combustion Power Plant Engr.		42													5	
Industrial Engr.	7	244	1	ε	3		34	1	3	1					26	-
Hydraulic Engr.															1	
Engineering Mechanics		22													2	
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Electrical Engr.		12			3		35									ᅴ
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ENGINEER   &	l. Picatinny Ars., N.J. Munitions Cmd. Hqs.	dquarters	Sp. Prol. Sel. Ammo.	2. Ft. Monmouth, N. J. Satellite Cmd. Agcy.	Electronis Cmd.Hgs.	U.S.Army Patent Agcy	ctronic	Proj.	Proj.	. Proj.	So proj madas	Starcom.	Signal Radio Prop. Agency	3. White Sands Msl. Range, N. M.	8	Electionics Rad Act.

Table 9.6 DISTRIBUTION OF USFRS IN FIELDS OF ENGINEERING BY INSTALLATION

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Cerandc Engineering								-					T	3		1	7	
Chemical Engr.	4		ı.			-		11	2	M	77	29	1	3	6		1	
Civil Engineering	3			1				r=4				1	†	-	21	2	1	1
Construction Engr.		1										7	T	1	5			
Electrical Engr.	N	1		2	2			7	6			7		3	49	1		3
Electronics Engr.	28	10		7	21	5		62	84	3		13	न	282	23	14		67
Engineering Mechanics	16			2	3			15	7			1		17	5			3
Hydraulic Engr.															2			
Industrial Engr.	7	-		4	4			43	91	1	80	9		32	40		-	26
Internal Combustion Power Plant Engr.	~				6			40	17					7	ω		П	
Marine Engineering															9			
Materials Engr.					2			H	7			2		~	10			7
Mechanical Engr.	6	<u>س</u>		2	37	4		20	11	H	4	10		29	88			89
Metallurgical Engr. Metallurgy and	9	6	-					9	٣		2			~	ی		T	5
Engineering									-					_	2			
Sanitary Engr.	2												<b>E</b>		r.		T	
Structural Engr.	-			-								7			9	Y	T	,
. reng notteuleV								1				-		_	-			
Ofper Engineering	15	30		13	91	٧		42	17	r.	α̈́Γ	32		46	43	2	<u>.</u>	

9-33

Ofher Engineering	20	9 2	53	49	101	8	0.5
puireenipud sedt()							
Valuation Engr.							
Structural Engr.			7				2
Sanitary Engr.	-	<b>H</b>				-	
Mining and Petroleum Engineering					1		
Metallurgy and Metallurgical Engr.		н		7		51	-
Mechanical Engr.	4	77 🗆	62	3		13	^
Materials Engr.		2	2	16		11	7
Marine Engineering				1			
Internal Combustion Power Plant Engr.				5			
Industrial Engr.	1		16	35	-	6	æ
Hydraulic Engr.			-	2		Э	30
Engineering Mechanics	2		7	11		27	22
Electronics Engr.	7	10	1	16	12 68 36 4	5	22
Electrical Engr.	~=			13	8 2		
Construction Engr.		\					'n
Civil Engineering				4			94
Chemical Engr.	8	<b>-</b>	7	7		2	
Ceramic Engineering			1			S	2
Architectural Engr.				1 191			
Agricultural Engr.							
Aeronautical Engr.	2		1	-	5	. 3	-
		eral D.C Act As. ch,		• h	iz. iv. Gr	Mas	
E BEIREE RING	10. Pt. Detrick, Md. Biological Labs.	il. Walter Rwed General Hospital, Wash., D.C Regional Dental Act Med. R&D Cmd. Hgs. Army Inst.of Rsch. Prosthetics Rsch.La		<ol> <li>Detroit Arsenal, Warren, Michigan Mobility Cmd, Hqs. Tark &amp; Auto Center</li> </ol>	fuachuca, Ar. Des.& Engr.D tronics Pvg.	15. Watertown Ars., Mas Nat'l. Rsch. Agency Headquarters	16. Engr.Waterways Exper. Station, Vicksburg, Miss.
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Table 9.6 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF ENGINEERING BY INSTALLATION 9-34

Other Engineering	25	-	1				1	r.	15	46	2	-		18	3	;	r.H
Valuation Engr.		T										Ī		1		,	7
Structural Engr.								1				-					
Sanitary Engr.					T							Ī					11
Mining and Petroleum Engineering				-	T		<b> </b>	T				T		1			$\dagger \dagger$
Metallurgy and Metallurgical Engr.	e				r		3			9		- 	$H^{-}$	-	-	<b> </b>	$\dagger \dagger$
Mechanical Engr.	2	-		┞			90		1	20	- ru	7		- -	<b>∔</b> -	7	
Materials Engr.	~		-	┝			-	•		$\vdash$		-		+	-		$\dagger \dagger$
Marine Engineering			-	-				T		$\mid$				$\dagger$			H
Internal Combustion Power Plant Engr.	'n		-		-	<del> </del> -					m	<del> -</del>		$\dagger$	-	-	H
Industrial Engr.	8				<u> </u>	<u> </u>	ť		77	1	П		<del>    .</del>	4		ď	,
Hydraulic Engr.														$\dagger$	 		Ħ
Engineering Mechanics							19			9	2			1		~	$\prod$
Electronics Engr.	21					г	,			3	12			7		1	9
Electrical Engr.	2						2				Ü			1			
Construction Engr.											н			1			
Civil Engineering	·					7					н						
Chemical Engr.							- 1										
Ceramic Engineering							-						+				
Architectural Engr.	9								6	7		႕				r,	
Agricultural Engr.							H					7					
Aeronautical Engr.	9	:	4		-	2	•	1.			75					-	
ENGINEERING INSTALLATION	Washington, D. C. AMC Hqs.	Sp. Proj.Acft.Weapnz			j.Loh	Dir.of Army Rsch. OCRD	Watervliet Ars., N. Headquarters	Land 2	•	Rock Island Ars.	Eus 18.		Trans. Agency Springfield Armory,	Headquarters	Ft. Sam Houston, Tex Medical Soc. Agency	ac o	Electronics P.G.Act
ENGIN	17. Was	Sp.	Sp.	Sp.	Sp.	Dir.	18. Wat	19. Roc	Wea	ROC	20. Ft. Tran	Trans.	21. Spring	Head	22. Ft. Med	23. Yuma Head	Elec

Table 9.6 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF ENGINEERING NY INSTALLATION 9-35

Construction Engr.  by w w w Electrical Engr.  Internal Combustion  whydraulic Engr.  whydraulic Engr.  whetallurgy and  whetallurgy and  whining and Petroleum  by w w w wetallurgy and  whining and Petroleum  sanitary Engr.  whetallurgy and  whining and Petroleum  sanitary Engr.	
Electrical Engr.  Decreical Engr.  Decreased and part of the properties of the prope	
Dectrical Engr.  Dectri	1
Electrical Engr.  Decrease Engr.  Electrical Engr.  Electrical Engr.  Engineering Mechanics  Hydraulic Engr.  Marine Engineering  Materials Engr.	LON
Electrical Engr.  D w w p p p p p p p p p p p p p p p p p	LLAT
Electrical Engr.  Dectrical Engr.  Dectrical Engr.  Dectrical Engr.  Dectrical Engr.  A hydraulic Engr.  Dewer Plant Engr.  A harine Engineering  Materials Engr.  A Materials Engr.  Dectrical Engr.  A Materials Engr.  Dectrical Engr.  A Materials Engr.  Dectrical Engr.  Dectric	INSTALLATION
Dectrical Engr.  Dectrical Engr.  Electronics Engr.  Hydraulic Engr.  Marine Engineering  Marine Engineering  Marine Engineering	A A
Electrical Engr.  Dumble by Electrical Engr.  Engineering Mechanics  Hydraulic Engr.  Dumble by Electronics Engr.  Internal Combustion  Power Plant Engr.  Asrine Engr.	ENGINEERING
Electrical Engr.  L L L L L L L L L L L L L L L L Electrical Engr.  A L L Engineering Mechanics  Hydraulic Engr.  D W D L L Engr.  Internal Combustion	INE
Electrical Engr.	OF ENC
Electrical Engr.	1
Electrical Engr.	FIELDS
Electrical Engr.	RS IN
Electrical Engr.	USERS
Construction Engr.	ION OF
	BUTIC
Civil Engineering	DISTRIBUT)
Chemical Engr.	
р Сетапіс Елділеетілу	(Cont.)
The hold Architectural Engr.	
ydricnjenkal Engr.	9.6 a
2. Aeronautical Engr.	Table
ENGINEERING  24. Dugway P.G., Utah Headquarters  25. Fort Knox, Ky. Armor Board Armor Board Armor Agency Human Rsch. Unit  26. Hanover, N. H.  Cold Regions R&D Lab.  27. St. Louis, Mo. Air & Surf. Mat.Cmd  28. Pine Bluff Ars., Ark. Headquarters  29. Ft. McClellan, Ala. Chem. Bio. Rad. Agency  30. Holloman AFB, N.M. Telecomputing Soc. Inc. Dynalectron Corp.  31. Ft. Lewis, Wash. Madigan Gen. Hosp. Infantry Agency	

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34. Ft. Bliss, Texas Air Defense Bd.	Nuclear Grp. Hqs.	Air Defense Agency	35. Pt. Bragg, N. C. Airborne Elec. & Spec. Warfare Bd.	Warfare	36. Pt. Douglas, Utah Desert Test Center	37. Cincinnati, Ohio Ohio River Dividab.	38. Army Rsch. Office Durham, N. C.	39. Ft. Ord, calif. Condt. Dev. Cnd. Exper. Ctr.	40. Ft. Rucker, Ala. Avn. Test Bd.	41. Edwards AFB, Calif. Avn. Test Activity	42. Ft. Totten, N. Y. Med.Equip.R&D Lab.
	Ft. Bliss, Texas Air Defense Bd.	Ft. Bliss, Texas         5         6           Air Defense Bd.         5         6           Nuclear Grp. Hqs.         6         6	Ft. Bliss, Texas         S         Ft. Bliss, Texas           Air Defense Bd.         5         6           Nuclear Grp. Hqs.         3         1	Ft. Bliss, Texas         Ft. Bliss, Texas         5         6         6         7         6         7         7         7         8         7         8         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9 <t< td=""><td>Ft. Bliss, Texas Air Defense Bd.         5         6         6         7         7         8         8         8         8         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         &lt;</td><td>Ft. Bliss, Texas         Ft. Bliss, Texas           Air Defense Bd.         5         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7<!--</td--><td>Pt. Bliss, Texas       Air Defense Bd.       5       Contain ati, Ohio ohio       5       Contain ati, Ohio ohio       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1</td><td>Ft. Bliss, Texas Air Defense Bd.       Air Defense Bd.       5       6       7       7         Air Defense Bd. Air Defense Agency       3       1       6       7       7         Air Defense Agency       Air Defense Agency       3       1       6       7       7         Air Dorne Elec. &amp; Spec. Warfare Agency       3       1       1       1       1       1         Spec. Warfare Agency       1       2       1       1       2       1       1       1       2       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1<!--</td--><td>Ft. Bliss, Texas Air Defence Bd.         5         6         6         7         7         8         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         &lt;</td><td>Ft. Bliss, Texas Air Defense Bd.         5         Principal Control of Stock         S         Principal Control of Stock         S         Principal Control of Stock         Principal Control of Sto</td><td>Ft. Bliss, Texas Air Defence Bd.         Ft. Bliss, Texas Air Defence Bd.         5         6         6         6         7         7         8         8         9         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9</td></td></td></t<>	Ft. Bliss, Texas Air Defense Bd.         5         6         6         7         7         8         8         8         8         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         <	Ft. Bliss, Texas         Ft. Bliss, Texas           Air Defense Bd.         5         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7 </td <td>Pt. Bliss, Texas       Air Defense Bd.       5       Contain ati, Ohio ohio       5       Contain ati, Ohio ohio       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1</td> <td>Ft. Bliss, Texas Air Defense Bd.       Air Defense Bd.       5       6       7       7         Air Defense Bd. Air Defense Agency       3       1       6       7       7         Air Defense Agency       Air Defense Agency       3       1       6       7       7         Air Dorne Elec. &amp; Spec. Warfare Agency       3       1       1       1       1       1         Spec. Warfare Agency       1       2       1       1       2       1       1       1       2       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1<!--</td--><td>Ft. Bliss, Texas Air Defence Bd.         5         6         6         7         7         8         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         &lt;</td><td>Ft. Bliss, Texas Air Defense Bd.         5         Principal Control of Stock         S         Principal Control of Stock         S         Principal Control of Stock         Principal Control of Sto</td><td>Ft. Bliss, Texas Air Defence Bd.         Ft. Bliss, Texas Air Defence Bd.         5         6         6         6         7         7         8         8         9         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9</td></td>	Pt. Bliss, Texas       Air Defense Bd.       5       Contain ati, Ohio ohio       5       Contain ati, Ohio ohio       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	Ft. Bliss, Texas Air Defense Bd.       Air Defense Bd.       5       6       7       7         Air Defense Bd. Air Defense Agency       3       1       6       7       7         Air Defense Agency       Air Defense Agency       3       1       6       7       7         Air Dorne Elec. & Spec. Warfare Agency       3       1       1       1       1       1         Spec. Warfare Agency       1       2       1       1       2       1       1       1       2       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1 </td <td>Ft. Bliss, Texas Air Defence Bd.         5         6         6         7         7         8         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         &lt;</td> <td>Ft. Bliss, Texas Air Defense Bd.         5         Principal Control of Stock         S         Principal Control of Stock         S         Principal Control of Stock         Principal Control of Sto</td> <td>Ft. Bliss, Texas Air Defence Bd.         Ft. Bliss, Texas Air Defence Bd.         5         6         6         6         7         7         8         8         9         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9</td>	Ft. Bliss, Texas Air Defence Bd.         5         6         6         7         7         8         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         <	Ft. Bliss, Texas Air Defense Bd.         5         Principal Control of Stock         S         Principal Control of Stock         S         Principal Control of Stock         Principal Control of Sto	Ft. Bliss, Texas Air Defence Bd.         Ft. Bliss, Texas Air Defence Bd.         5         6         6         6         7         7         8         8         9         8         9         8         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9         9

Table 9.6 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF ENGINEERING BY INSTALLATION

:yer Engineering	10		2		1698
luaticn Engr.	2Λ		+		8
cruccural Engr.					25
тавид Диватив			-		25
udṛ <b>uee</b> t <b>ṛ u</b> d	Е		-		
ining and Petroleum	- 1		<del>-</del>		9
etallurgy and etallurgical Engr.					197
echanical Engr.	W	•	4		764
aterials Engr.	w				88
arine Engineering	W				10
nternal Combustion ower Plant Engr.					144
ndustrial Engr.	ı [			4	645
Ydraulic Engr.	H				38
ngineering Mechanics	Ξ F			1	211
lectronics Engr.	a [	٧		2	1912506
lectrical Engr.	4				191
construction Engr.	,				18
civil Engineering	$\Big]$				168
Chemical Engr.	, [				136
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Architectural Engr.					296
Agricultural Engr.					9
heronautical Engr.					376
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Table 9.6 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF ENGINEERING BY INSTALLATION

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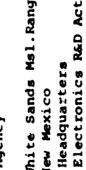


Table 9.7 DISTRIBUTION OF USERS IN FIELDS OF MATHEMATICS & STATISTICS BY INSTALLATION

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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF MATHEMATICS & STATISTICS BY INSTALLATION

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Table 9.7 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF MATHEMATICS & STATISTICS BY INSTALLATION

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Table 9.7 (Cont.) DISTRIBUTION OF UERS IN FIELDS OF MATHEMATICS & STATISTICS BY INSTALLATION

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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF MATHEMATICS & STATISTICS BY INSTALLATION Table 9.7

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MATHEMATICS & STATISTICS INSTALLATION	36. Ft. Douglas, Utah Desert Test Ctr.	37. Durham, N. C. Army Rsch. Office	38. Ft. Ord, Calif. Combat Dev. Cmd. Exper Ctr.	39. Ft. Rucker, Ala. Human Rsch. Unit	40. Ft. Totten, N. Y. Med. Equip. R&D Lab	TOTALS

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Acoustics	2			15			4	4		7 -	<b>i</b>	8	1
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Table 9.8 DISTRIBUTION OF USERS IN FILLDS OF PHYSICS BY INSTALLATION

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<b>Pa</b> YSICS	INSTALLATION	5. Redstone Arsenal Huntsville, Ala. Missile Cmd Hqs Missile Spt Cmd	6. Edgewood Ars, Md. Nuclear Defense Lab Chemical R&D Lab Ervir. Hyg. Agency	7. Harry Diamond Labs Washington, D. C.	8. Ft. Belvoir, Va. Engr. R&D Labs Engr. GIMRADA	9. Frankford Ars. Phila., Pa.	10. Ft. Detrick, Md. Biological Labs

Table 9.8 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF PHYSICS BY INSTALLATION

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Table 9.8 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF PHYSICS BY INSTALLATION

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Electromagnetic Waves and Electron Physics	3	4	1		-	1
Atomic and Molecular Physics	2		H	H		
Acoustics	2	4		??	<b>~</b>	
PHYSICS	15. Watertown Ars., Mass Matl Research Ageny	16. Engr. Waterways Exper. Sta. Vicksburg, Miss.	17. Washington, D. C. AMC Hqs. Dir. of Army Rsch,	18. Watervliet Ars., N.Y Headquarters	19. Rock Island Ars, Ill. Rock Island Ars.	20. Pt. Eustis, Va. Transportation Rsch Cmd.

Table 9.8 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF PHYSICS BY INSTALLATION

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Elementary Particle Physics						
Electromagnetic Waves and Electron Physics				м		7
Physics And Molecular		· · · · · · · · · · · · · · · · · · ·				p-4
Acoustics				7		
PRYSICS	21. Springfield Armory, Spfd., Mass. Headquarters	22. Yuma P. G., Ariz. Headquarters	23. Dugway P. G. Utah Headquarters	24. Pt. Knox, Ky. Armor Board Med. Rsch. Lab Armor Agency	25. Presidio of San Francisco, Calif. Letterman Gen Hosp.	26. Hanover, N. H. Cold Regions R&E Lab.

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Table 9.8 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF PHYSICS BY INSTALLATION

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Table 9.8 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF PHYSICS BY INSTALLATION

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Other Physics		170
Physics of Fluids		92
Biophysics		48
Theoretical Physics		14
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Solid State	1	254
Optics		252
Physics Physics		86
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Elementary Particle Physics		9
Electromagnetic Waves	1	305
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Acoustics		68
PNYSICS	33. Durham, N. C. Army Research Office 34. Erie P. G., Pt. Clin ton, Ohio Headquarters	TOTALS

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DISTRIBUTION OF USERS IN FIELDS OF PSYCHOLOGY BY INSTALLATION Table 9.9

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PSYCHOLOGY INSTALLATION	12. Detroit Ars. Warren, Mich Tank & Auto Ctr.	13. Ft. Huachuca, Ariz. Electronic P. G. Com-Elect Agency	14. Watertown Ars, Mass Matl. Research Agency	15. Engr. Waterways Exper. Sta. Vicksburg, Miss.	16. Washington, D. C. AMC Hgs. Dir. of Army Rach	•	17. Watervliet Ars. N.Y. Headquarters
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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF PSYCHOLOGY BY INSTALLATION Table 9.9

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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF PSYCHOLOGY BY INSTALLATION Table 9.9

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Home Economics and Mathematics History of Science

Fine and Applied Arts

Business and Commerce

Music

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Philosophy of Science

Library and Archival Sci.

Political Science

Law Jurisprudence

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outh, N. J. te Cmd. Agend my Patent	R&D Labs oj. MQM≈58A oj. Radas	hite Sands Msl Range . M. Headquarters Elect. R&D Labs	Aberdeen P.G. Md. Ballistics Rsch Lab Human Engr. Labs Test & Eval Cmd Hqs Headquarters Limited War Labs Ordnance Agency
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DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION Table 9.10

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Sociology					
Religion and Theology					
Public Administration			-		ŀ
Political Science					
Philosophy of Science					
Patent Law			<del>-</del>		7
Music					
Library and Archival Sci.		~			
Law Jurisprudence					S
Journalism		7 7		N	
Int. Relations					
Home Economics					
Aistory of Science and Mathematics					
History					
Fine and Applied Arts					
Education				<b>H</b> H	
Economics					
Business and Commerce			<del></del>		
.mbA seenisud	ю	7	7	H	
Area Studies					
ухсувотоду		H			
SOCIAL SCIENCE	5. Redstone Ars., Hunts- ville, Ala. Missile Cmd. Hqs. Missile Spt. Cmd.	6. Edgewood Ars., Md. Nuclear Def. Lab Headquarters Chem. R&D Labs Envir. Hyg. Agency	7. Harry Diamond Labs Washington, D. C.	8. Ft. Belvoir, Va. Engr. R&D Labs Engr. GIMRADA Combat Dev.Cmd.Hqs. Engr. Ctr. & School Army Mgmt. School	9. Prankford Ars. Phila., Pa.

Table 9.10 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION

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Sociology								<del></del>
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Public Administration		·	`					
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Journalism								
Int. Relations								
Home Economics						7		
History of Science and Mathematics								
Нівсоку								
Fine and Applied Arts						8		
Education		н	-	4				
Economics								
Business and Commerce								
Business Adm.	2	7	7		г			
Area Studies	-			7		-		
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SOCIAL SCIENCE	10. Ft. Detrick, Md. B ological Labs	d, Wash, ed Gen	Med. R&D Cmd. Hqs. Inst. of Dental	Research Army Inst. of Rsch. Prosthetics Rech Lab	02	12. Natick, Mass. Natick Lab Hqs. Inst. of Envir. Med.	13. Detroit Ars. Warren,	Tank & Auto Center
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Table 9.10 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION

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Occupational Health Industrial Hygiene and

Scientific and Technical

Religion and Theology

Public Administration

Philosophy of Science

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Patent Law

Journalism

History

Education

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Area Studies

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Int. Relations

Home Economics and Mathematics History of Science

Fine and Applied Arts

Business and Commerce

INSTALLATION

Ft. Huachuca, Ariz. Com-Elect. Agency Elect. R&D Act. Elect. P. G. 14.

Watertown Ars., Mass Mat'1. Rach Agency Headquarters 15.

Vicksburg, Miss. Engr. Waterways Exper Sta. 16.

Dir. of Army Rsch. Washington, D. AMC Hqs.

Watervliet Ars., Headquarters 18.

Rock Island Ars., Il Weapons Cmd. Hgs. Rock Island Ars. 19.

Trans. Rsch. Cmd. 20. Pt. Eustis, Va.

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DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION (Cont.) Table 9.10

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Patent Law

Journalism

History

Education

Economics

Business Adm.

Area Studies

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Int. Relations

Home Economics and Mathematics History of Science

Fine and Applied Arts

Business and Commerce

Music

Industrial Hygiene and Occupational Health

Scientific and Technical

Religion and Theology

Public Administration

Philosophy of Science

Library and Archival Sci.

Political Science

Law Jurisprudence

Elect. P.G. Test Yuma, P.G., Ariz. Headquarters

Dugway P.G., Utah Headquarters 23.

Ft. Knox, Ky. Armor Agency Armor Board

Presidio of San Letterman Gen. cisco, Cal. 25.

Cold Regions R&E Hanover, N. H. 26.

Air & Surface Ma St. Louis, Mo. 27.

Chem-Bio-Rad Agency Ft. McClellan, Ala. Chem Ctr & School 28.

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DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION (Cont.) Table 9.10

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Home Economics							
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SOCIAL SCIENCE INSTALLATION	. Holloman AFB, N. M. Telecomputing Soc Ind	. Ft. Lewis, Wash. Madigan Gen. Hosp.	. Ft. Benning, Ga. Infantry Agency Human Rsch. Unit	. Ft. Lee, Va. OM Rsch. & Engr. Fld. Svc. Agency	. Ft. Bliss, Texas Nuclear Group Hgs. Air Defense Agency	. Pt. Douglas, Utah Desert Test Ctr.	Durham, N. C. Army Rsch. Office.
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(Cont.) DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION Table 9.10

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Occupational Health				9
Industrial Hygiene and			<del></del>	9
Documentation Demography				52
Scientific and Technical		<del></del>	a	2 15
Anthropology		<del></del>		
Speech				
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Religion and Theology				
Public Administration				2
Political Science			<b>~</b>	н
Philosophy of Science			·	
Patent Law				11
Music				
Library and Archival Sci.		-		21
Law Jurisprudence				6
meilsarvot			H	19
Int. Relations			- · · · · · · · · · · · · · · · · · · ·	٦
Номе Есоломіся		-		2
History of Science and Mathematics	<del> </del>			
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Fine and Applied Arts				2
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Есолотісз	п			2
business and Commerce				
.mbA sesnisud			нн	54
Res Studies				4
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SOCIAL SCIENCE	36. Pt. Ord, Calif. Combat Dev. Cmd. Exper. Ctr.	37. Ft. Rucker, Ala. Aeromed Rach. Unit	38. Pt. Gordon, Ga. Mil. Police Agency Civil Affairs Agency	TOTAL
	•	-	-	

Table 9.10 (Cont.) DISTRIBUTION OF USERS IN FIELDS OF SOCIAL SCIENCE BY INSTALLATION

#### 10.0 USER NEEDS AND INSTALLATION FUNCTION

L

In this study an effort was made to determine the relationship between the job function of the user or the mission/function of the installation at which the user works and the information needed by the user to perform his tasks or the methods used to gather information. Although information on the function of individuals working for the Army was not available for this study, it was possible to correlate the functions of R&D installations with the subject fields of a high percentage (approximately 70%) of users at each installation. This comparison, presented in Table 10.1, shows a high degree of correspondence between the two areas. It also provides a check on the validity of the TEL/TIPS Survey and, in a broad sense, the function of the users at each installa-The information on functions presented in the table was obtained from the U.S. Government Purchasing and Sales Directory, compiled by the Small Business Administration, dated July 1964. The subject fields of potential users of information were obtained from the TEL/TIPS Survey.

Based on the information in this study, it is concluded that a functional analysis of the user, either individually or in specific group configurations, would not aid in the identification of user needs or provide useful design information for EDIS. The importance of this information is the logical correspondence shown

between the function of the installation and the subject fields of the user. This data will be used in succeeding work units of EDIS Task I to ascertain if the data on D&I holdings and information systems, along with the information on users' subject fields, is compatible with the functions of each installation.

# TABLE 10.1 COMPARISON BETWEEN MISSION/FUNCTION OF ARMY R&D INSTALLATIONS AND SUBJECT FIELDS OF USERS

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## Organization and Installation

٦ . z Picatinny Arsenal, Headquarters

# Mission/Function

tems, bombs, mines, grenades, explosives, propellants and and atomic warhead sections DoD Plastic Technical Evaluation Center; designs and develops artillery ammuniand hybrid propulsion syspyrotechnics; operate the Research in the fields of liquid tion, propellants,

## Subject Fields of Jsers

- Industrial Engineering Ordnance Engineering 2 m 4 m 9 r
- Electronics Engineering Mechanical Engineering
  - Organic Chemistry
- Maintenance Engineering

Product Engineering

- Electronics Research and Development Labs Ft. Monmouth, N. J.
- warfare, meteorology, avionics tions, automatic data processing, surveillance, electronic components parts, equipments science, the area of military electronics; develops and systems for communicaand design for electronic Research in all fields of new materials, techniques and related fields.
- Electronics Engineering
  - Electromagnetic Waves and Electron Physics
- Mechanical Engineering Solid State Physics
  - Physical Chemistry

## Organization and Installation

Electronics Research and White Sands Missile Range, New Mexico

Development Activity

## Mission/Function

instrumentation leading to the development of equipment, systems, techniques, and devices; processing, and missile range development activities of the meteorology, electronic data missile vulnerability, missprovides meteorological supmissile electronic warfare, ile surveillance, environmental sciences, including and coordinates the mistal electronic countermeasures Research in the fields of port for the research and U. S. Army Missile Ranges effort of the U. S. Army.

### Subject Fields of Users

- Electronics Engineering Numerical Methods & Computation
  - Atmospheric Dynamics, Chemistry & Physics
    - Optics
- Industrial Engineering 4.00.7
  - Ballistics
- Electromagnetic Waves and Electron Physics

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March 194

# Organization and Installation

Aberdeen Proving Ground U. S. Army Ballistics Research Laboratories

# Mission/Function

Basic and applied research
in weapons technology; weapons systems evaluation; and
ballistics and related sciences of physics, mathematics,
chemistry, engineering, and
biophysics.

## Subject Fields of Users

- . Electronic Engineering . Numerical Methods and
- Computation
  Mathematics of Resource Use
- . Physics of Fluids
- . Statistics
- Organic Chemistry
- · Atmospheric Dynamics
- Chemistry & Physics 8. Engineering Mechanics
- 9. Aeronautical Engineering
  - 16. Mechanics
- 11. Physical Chemistry

- Aberdeen Proving Ground U. S. Army Human Engineering Laboratories
- Human factors research and engineering; monitors the total
  AMC human factors program; assures that AMC material evolved conforms with the capabilities and limitations of the fully equipped soldier to operate and maintain the material in his operational environment consistent with tactical requirements and logistic capabilities.
- . Human Engineering
- Experimental, Comparative and Physiological Psychology
  - Acoustics
- 4. Electronics Engineering

## Organization and Installation

U. S. Army Coating and Aberdeen Proving Ground Chemical Laboratory

# Mission/Function

tion and industrial preparedtions in the fields of auto-Basic and applied research ness programs within these and cleaners; standardizaand engineering investigamotive chemicals, organic and semiorganic coatings, assigned fields.

> Redstone Arsenal, Ala. Missile Command Hq.

a material development proof the development program. Plan, direct and supervise peculiar to these systems; and evaluate basic and apgram embracing guided and ballistic systems, rocket plied research in support plan, direct, accomplish motors, and components

## Subject Fields of Users

- Organic Chemistry
- Analytical Chemistry Physical Chemistry

- Internal Combustion Power Electronics Engineering Industrial Engineering Plant Engineering
  - Aeronautical Engineering 4.00
    - Mechanical Engineering Organic Chemistry

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# Organization and Installation

Edgewood Arsenal, Maryland U. S. Army Nuclear Defense Laboratory

## Mission/Function

To provide technical information in the field of radiological defense and health physics to agencies responsible for the development for clothing, vehicles, protective structures, and other end items which might incorporate nuclear protection; develop radioactive waste disposal methods and shipping containers; conduct research in the nuclear weapons effects research area of fallout, residual radiation, and thermal

Edgewood Arsenal, Maryland Chemical Research and Development Laboratories

Research and development in the fields of chemical, smoke and flame weapons, including the defensive aspects.

## Subject Fields of Users

- . Nuclear Structure Physics
  - Physical Chemistry
- Solid State Physics
- 4. Analytical Chemistry
  - . Meteorology

lopment in the 1. Chemical Warfare Agents 1, smoke and 2. Analytical Chemistry

- 3. Pharmacology
- 4. Organic Chemistry
- 5. Chemical Engineering
  - 5. Physical Chemistry

## Organization and Installation

Harry Diamond Laboratories, Washington, D. C.

# Mission/Function

basic and applied research in supincluding counter-countermeasures, characteristics which will affect tems; conducts basic research in performs weapons systems synthenuclear environment, battlefield conditions and high altitude and cept phase of terminal guidance; simulation, on materials, compoand on selected advanced energy transformation and control systhe physical sciences; performs fluid amplification and control port of assigned mission on inimmunity to adverse influences, strumentation, measurement and target detection and signature analysis and for target interfuze design to achieve maximum nents and subsystems including basic and applied research on and development of pure fluid sis and analysis to determine space environments. Performs electronic timers for weapons

#### Subject Fields of Users

Electronics Engineering Industrial Engineering Mechanical Engineering Ordnance Engineering Solid State Physics Basic and applied research in devices and systems.

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## Organization and Installation

Development Laboratories Engineer Research and Ft. Belvoir, Virginia

# Mission/Function

bridges, and firefighting equipmine-field laying and clearance, mine detection, and electrical equipment; water purification, Research, development, design air conditioning, and heating engines, petroleum equipment, and testing in the fields of radiation and illumination, waste disposal, camouflage, engineering; construction, dustrial gases, industrial

Frankford Arsenal, Philadelphia, Pa

Metallurgy and Metallur-Electronics Engineering Mechanical Engineering Industrial Engineering Physical Chemistry gical Engineering Organic Chemistry Optics ري . nition, and mechanical time fuzes, and electrochemical treatment of fire control devices, cartridge ammunition, cartridge cases and projectiles for artillery ammuthetic lubricants, and plating rous metallurgy, optics, syn-Research in fields of nonferactuated devices, small arms metals; designs and develops

#### Subject Fields of Jsers

- Mechanical Engineering
- Industrial Engineering Electrical Engineering
- Electronics Engineering
  - Solid State Physics
- Optics
- Civil Engineering
- Physical Chemistry
- Organic Chemistry

## Organization and Installation

Biological Laboratories Ft. Detrick, Maryland

## Mission/Function

ij agents and weapons, including the defensive aspects Research and development the fields of biological

## Subject Fields of Users

- Biological Warfare Agents
- Virology
- Microbiology
- Aerobiology 9 m 4
- Biochemistry Bacteriology 5.
- Imminology
- 6.

## Natick, Massachusetts Natick Laboratories

food service equipment, field and earth sciences; engineering to meet military requireprinting and composing equipments in the commodity areas containers, POL handling and support equipment, including dispensing equipment, materarmor, footwear, organic ma-Research and development in of textiles, clothing, body ment, tentage, and air deterials, insecticides and the physical, biological, ials handling equipment, fungicides, subsistence, livery equipment.

- Organic Chemistry
- Mechanical Engineering
  - Agriculture and Food Chemistry
- Analytical Chemistry
  - Physical Chemistry 5
- Product Engineering 9
- Industrial Engineering
  - Microbiology
    - Climatology

# TABLE 10.1 (Cont'd)

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## Organization and Installation

#### U. S. Army Tank Automotive Detroit Arsenal, Warren, Michigan Center

# Mission/Function

nucleonics and land locomotion as pertains to tank-automotive tion of operable demonstration material; design and construcprograms in physical sciences, models of tracked and wheeled vehicles; operates automotive components; conducts research components including engines, tank-automotive vehicles and power trains, and suspension development and engineering Advanced design programs on laboratories for research, of military vehicles and systems.

#### provides worldwide meteorological veillance and target acquisition, data processing, communications electronic warfare, combat surmeteorology and avionics; also ment of systems and equipment Research, design and developin the fields of automatic support.

Electronics Engineering

Meteorology

### Subject Fields of Users

- Architectual Engineering Mechanical Engineering 3.5.
  - Electronics Engineering Industrial Engineering
    - Materials Engineering Organic Chemistry 4.5
- Electrical Engineering Engineering Mechanics 9

Electronics Research and Development Activity

Ft. Huachuca, Arizona

Subject Fields  of Users  Product Engineering  Maintenance Engineering  Industrial Engineering  Mechanical Engineering  Ordnance Engineering	Metallurgy and Metal- lurgical Engineering Engineering Mechanics Physical Chemistry Mechanical Engineering Solid State Physics Analytical Chemistry
4 2 6 4 5	
Mission/Function  Design, development, and production of missile containers and related items.	To manage and direct that portion of the AMC materiels research program conducted within its own laboratories, including basic scientific research, and research in metals, ceramics and other materials.
Organization and Installation Watertown Arsenal, Massachusetts Headquarters	Watertown Arsenal, Mass- achusetts Materiels Research Agency

### Organization and Installation

Watervliet Arsenal, New Headquarters

# Mission/Function

and processes; performs weaponssolid state physics, metallurgy, relating to mortars, recoilless sign, procurement, storage and spection gages for cannon, and sciences, engineering sciences equipment; responsible for deissue of all special final incalibration, proofing and test equipment; responsible for apin the fields of applied mathengineering and manufacturing rifles, cannon assemblies and cannon bore inspection tools, oriented exploratory research Design, development, product microscopy and high pressure and high pressure materials components thereof, related secondary items, tools and ematics, applied mechanics, plied research in Physical

#### Subject Fields of Usars

Mechanical Engineering Engineering Mechanics Metallurgy and Metallurgical Engineering Ordnance Engineering Product Engineering materials and processes.

## Organization and Installation

Rock Island Arsenal, Ill. Rock Island Arsenal

## Mission/Function

tives, greases, and packaging engineering research related to design, development engicomponents and end items of techniques for advanced materiel; performs mechanical Basic and applied research and development related to field artillery and rocket sign and concept; performs nents which are new in deneering and production of weapons and weapon comporubber, corrosion prevenresearch with respect to launchers.

#### Subject Fields of Users

- . Organic Chemistry
- Physical Chemistry
- Ordnance Engineering
- 4. Mechanical Engineering

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## Organization and Installation

Transportation Research Ft. Eustis, Virginia Command

## Mission/Function

aerodynamics research program, as well as applied aeronautiamphibious, and land logistiequipment utilized in marine, studies of complete advanced design, fabrication, testing Research and engineering of cal engineering research in in the field of near-ground aeronautical propulsion and cal transport systems; peraircraft systems; conducts basic and applied research and evaluation of advanced aerodynamics; conducts an forms proliminary design aircraft systems.

> field, Massachusetts Springfield Armory

relating to personal weapons, Research, development, engineering, and manufacturing automatic weapons and aircraft armament.

### Subject Fields of Users

- Aeronautical Engineering Electronics Engineering
  - Mechanical Engineering

Springfield Armory, Spring-

Mechanical Engineering Ordnance Engineering Product Engineering

Metallurgy and Metallurgical Engineering

### Organization and Installation

Hanover, New Hampshire
U. S. Army Cold Regions
Research and Engineering
Laboratory

## Mission/Function

Basic and applied research pertaining to snow, ice, and frozen ground.

### Subject Fields of Users

- . Civil Engineering .. Hydrology
- nyurology Photogrammetry, Surveying, Cartography and Photointerpretation
  - Electronic Engineering
    - 5. Engineering Mechanics

- c. Louis, Missouri
  Aviation and Surface duction
  Materiel Command and a and a
- Design, development, production, and maintenance engineering for aircraft and aeronautical equipment; product, production, and maintenance engineering on amphibious, marine, and rail equipment; procures above air and surface equipment.
- Aeronautical Engineering
   Electrical Engineering
  - 3. Mechanical Engineering

#### 11.0 USER NEEDS AND GEOGRAPHIC DISTRIBUTION

An important criterion in the design of an information network is the geographic distribution of the users of that network. In this study an attempt was made to determine the concentrations of potential users of EDIS by various parameters, such as location and discipline. Table 11.1 shows the number of users by state. Table 11.2 presents the number of users by installation. Table 11.3 shows the number of users by discipline for geographic areas of the United States. Data and information used to prepare these tables were obtained from the TEL/TIPS Survey conducted in FY 1964.

Table 11.1
Distribution of Army RDT&E Personnel by State

<u>State</u>	No. of RDT&E Personnel	<u>State</u>	No. of RDT&E Personnel
New Jersey	3072	Texas	1"0
Maryland	2034	California	157
Washington, D. C.	. 1285	Illinois	152
New Mexico	1231	Utah	151
Alabama	970	Kentucky	120
Massachusetts	870	New Hampshire	110
Virginia	813	Arkansas	91
Pennsylvania	514	Missouri	79
Arizona	429	Georgia	77
Michigan	403	Washington	76
Mississippi	269	North Carolina	60
New York	221	Ohio	45
		Colorado	43

#### Table 11.2 Distribution of Army RDT&E Personnel by Installation

	No. of
	RDT&E
<u>Installation</u>	<u>Personnel</u>
Picatinny Arsenal, New Jersey	1576
Ft. Monmouth, New Jersey	1496
White Sands Missile Range, New Mexico	1143
Aberdeen Proving Ground, Maryland	870
Redstone Arsenal, Alabama	857
Edgewood Arsenal, Maryland	682
Harry Diamond Labs, Washington, D. C.	610
Ft. Belvoir, Virginia	608
Frankford Arsenal, Philadelphia, Pa.	505
Ft. Detrick, Maryland	482
Walter Reed General Hospital, Washington, D. C.	463
Natick Labs, Massachusetts	451
Detroit Arsenal, Warren, Michigan	403
Ft. Huachuca, Arizona	302
Watertown Arsenal, Massachusetts	271
Engineering Waterways Exper. Station,	
Vicksburg, Mississippi	269
Washington, D. C.*	212
Watervliet Arsenal, New York	205
Rock Island Arsenal, Illinois	162
Ft. Eustis, Virginia	156
Springfield Armory, Springfield, Massachusetts	148
Ft. Sam Houston, Texas	129
Yuma Proving Ground, Arizona	127
Dugway Proving Ground, Utah	120
Ft. Knox, Kentucky	120
Presidio, San Francisco, California	115
Hanover, New Hampshire	110
St. Louis, Missouri	101
Pine Bluff Arsenal, Arkansas	91
Ft. McClellan, Alabama	89
Holloman Air Force Base, New Mexico	88
Ft. Lewis, Washington	76
Ft. Benning, Georgia	65

^{*}Includes AMC Headquarters, Director of Army Research, OCRD, and Special Projects.

#### Table 11.2 (Cont'd) Distribution of Army RDT&E Personnel by Installation

	NO. OI
Installation	RDT&E Personnel
Ft. Lee, Virginia	49
Medical Research & Nutrition Lab, Denver, Colo.	43
Ft. Bliss, Texas	41
Ft. Bragg, North Carolina	32
Ft. Douglas, Utah	31
Ohio River Division Lab, Cincinnati, Ohio	29
Army Research Office, Durham, N. C.	28
Ft. Ord, California	26
Ft. Rucker, Alabama	24
Edwards Air Force Base, California	16
Ft. Totten, New York	16
Erie Proving Ground, Port Clinton, Ohio	16
Ft. Gordon, Georgia	12
Electronics Material Agency, Philadelphia, Pa.	8
Valley Forge General Hospital, Phoenixville, Pa	. 1

Table 11.3 shows the distribution of Army RDT&E personnel by geographic area for each of the nine disciplines. The states included in the geographic areas are as follows:

Geographic Areas	<u>States</u>
1. Northeast	Massachusetts, New Hampshire, New York, New Jersey and Pennsylvania
<ol><li>Middle Atlantic</li><li>(D. C. Area)</li></ol>	Virginia, Washington, D. C. and Maryland
3. South	North Carolina, Georgia, Texas, Alabama, Arkansas, Kentucky, Missouri and Mississippi
4. West	California, Utah, Arizona, New Mexico, Colorado, and Washington
5. Middle West	Ohio, Michigan, Illinois

A number of observations may be made from the data presented in Table 11.3.

- a. All disciplines are heavily concentrated in the combined Northeast and Middle Atlantic area.
- b. Engineering and Physics have their largest concentrations in the Northeast.
- c. Biology, Chemistry and Psychology have their major concentrations in the Middle Atlantic (D. C. Area).
- d. Significant concentrations in Earth Science, Mathematics and Statistics, and Social Science exist in the West.
- e. The South has a significant concentration in Psychology.
- f. Engineering is the only discipline that has a significant number of users in each geographic area.

Geographical distribution data from the tables in this section along with data from the concurrent HRC reports on D&I holdings and existent data systems should be used in the design of EDIS to determine the optimal number and locations of the EDIS switching centers.

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Distribution of Users by Discipline Accarding to Geographic Area Table 11.3

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			Geographic	ic Area		
	No. of RDT&E		Middle Atlantic			
Discipline	Personnel	Northeast	(D.C. Area)	South	West	Midwest
		%	%	%	%	%
Astronomy	6	33.3	9.99	0	0	0
Biology	1297	4.9	73.1	8.8	13.2	0
Chemistry	1683	35.6	42.7	10.1	5.7	5.9
Earth Science	458	30.0	29.5	12.6	25.8	2.1
Ergineering	7572	45.6	22.6	11.5	12.4	7.9
Math & Statistics	964	22.9	33.2	12.9	29.2	1.8
Physics	1471	42.8	36.3	8.6	10.8	1.5
Psychology	262	16.5	35.0	33.5	13.4	1.6
Social Science	370	29.7	29.3	17.3	21.3	2.4

#### APPENDIX A

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Appendices.

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#### 13 ABSTRACT

This report presents the identification of user needs in the Army RDT&E community. Two types of information are provided in this report. The first type includes discussions of the RDT&E cycle, the level of informational need, time response, item categories and other factors as they relate to the user of scientific and technical information. The second type of information presented is parametric and includes information on the users in the Army RDT&E community classified by discipline, subject field, mission/function and geographic distribution. This information was developed as part of the Task I effort for the Army Engineering Data and Information System (EDIS).

Virginia

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